when relatively high barometric pressure and variable winds prevailed in that locality. In instances areas of low pressure passed eastward from the American continent attending whose advance no fog has been reported. Between the fifty-fifth and sixty-fifth meridians the development of fog attended the presence to the northward or northwestward of areas of low pressure. Off the coast of the United States fog attended the passage of an area of low pressure over the valley and Gulf of Saint Lawrence on the 27th and 28th; on the 17th a storm of great violence passed northeastward over the middle Atlantic states and a dense fog was reported off the coast south of Sandy Hook.

TEMPERATURE OF THE AIR (expressed in degrees, Fahrenheit).

The distribution of mean temperature over the United States and Canada for December, 1888, is exhibited on chart ii by dotted isotherms. In the table of miscellaneous meteorological data the monthly mean temperatures and the departures from the normal are given for stations of the Signal Service. The figures opposite the names of the geographical districts in the columns for mean temperature show the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the departure is below the normal and subtracting when above.

The mean temperature was highest over southern Florida, where a reading of 67°.1 was noted at Key West. Values rising above 55° were reported over Florida, south of the thirtieth parallel, along the coast of Texas, in the lower Rio Grande valley, along the south coast of California, in the extreme southwestern part of Arizona, and at stations near the west-central coast of California. The lowest mean temperature occurred in Manitoba, where it ranged to 12° at Fort Garry. Values falling below 20° were reported over northern New Brunswick, in the lower Saint Lawrence valley, northern Ontario, northern Minnesota and Dakota, and northeastern Montana. The mean temperature also ranged below 20° at stations in southwestern Wyoming, northwestern Colorado, and the extreme northeastern part of Utah.

The mean temperature was above the normal over a greater portion of the country, the greatest departures above the normal being noted in Montana and Dakota, where, at stations, they amounted to more than 15°. From this region they become gradually less marked eastward to the Canadian Maritime Provinces, southward to the Rio Grande Valley and the Gulf of Mexico, and westward to the Pacific coast. The mean temperature was slightly below the normal within an area extending from southeastern Arizona and southwestern New Mexico northwestward to north-central California, while to the southward of a line traced from the coast of Virginia southwestward to the Gulf coast between New Orleans, La., and Galveston, Tex., the departures below the normal gradually increased southward to the southern extremity of Florida, where they amounted to more than 4°.

The following are some of the most marked departures from the normal at the older established Signal Service stations:

Above normal.	°	Below normal.	°
Poplar River, Mont	16.2	Key West, Fla	4.2
Fort Totten, Dak	15.4	Jacksonville, Fla	3.4
Minnedosa, N. W. T	12.3	Savannah, Ga	3.3
Moorhead, Minn	12.2	Wilmington, N. C	2.2
Bismarck, Dak	10.2	Keeler, Cal	2.2

MAXIMUM AND MINIMUM TEMPERATURES.

The highest temperatures for the month were reported in the lower Rio Grande valley, where they rose above 80°. Values above 75° were noted over the southern half of Florida, at several points in Texas south of the thirtieth parallel, at Yuma, Ariz., and Los Angeles, Cal. At Des Moines, Iowa, Saint Paul, Minn., Yankton, Dak., Boisé City, Idaho, and Roseburgh, Oreg., the maximum temperatures were higher than for any preceding December during the periods of observation. The most notable deficiencies occurred in the middle Atlantic, south Atlantic, and west Gulf states, in the Ohio and upper Mississippi valleys, the upper lake region, the southern plateau and southeastern slope of the Rocky Mountains, where, at stations, the maximum temperatures were 10°, or more, below the maximum values for the corresponding month of previous years.

The lowest temperatures were reported in northwestern Minnesota, central Montana, southern Wyoming, and northeastern Utah, where they fell below —10°, the lowest reading, —16°, being noted at Saint Vincent, Minn. The minimum temperatures fell below zero in northern New England and northern New York, and north of a line traced from northeastern Minnesota southwestward into Colorado, and thence irregularly northwestward to western Montana. They were below 32°, except in Florida south of the twenty-eighth parallel, along and near the west Gulf coast, in western California, and along the immediate north Pacific coast. Unusually low temperatures have not been reported, and at a large majority of stations they were considerably above the lowest readings previously noted for December, notably in the upper Mississippi and upper Missouri valleys, the upper Lake region, and the middle-eastern slope and the plateau regions of the Rocky Mountains, where, at stations, the minimum readings were more than 30° above the December records of previous years.

RANGES OF TEMPERATURE.

The monthly and the greatest and least daily ranges of temperature at Signal Service stations are given in the table of miscellaneous meteorological data. The greatest monthly ranges occurred over southwestern Dakota, northeastern Montana, and the intermediate territory, where they exceeded 70°. From this region the ranges gradually decreased westward to the Pacific coast, where they amounted to less than 20° at the mouth of the Columbia River, southward to the Gulf coast, where they were less than 35° near Galveston, Tex., and eastward to Michigan, where they were less than 35° along the east coast of Lake Michigan. From this locality they increased to more than 55° over northern New England, from whence they decreased somewhat irregularly to southern Florida, where a range of less than 30° was noted at Key West. Along the Pacific coast the monthly ranges varied from less than 20° over the southwestern part of Washington Territory, to more than 35° in the vicinity of Los Angeles, Cal.

The following are some of the extreme monthly ranges:

Greatest.	°	Least.	°
Poplar River, Mont	72.8	Fort Canby, Wash	19.0
Fort Sully, Dak	72.5	San Francisco, Cal	21.6
Rapid City, Dak	72.4	Red Bluff, Cal	25.6
Northfield, Vt	59.5	Key West, Fla	27.2
Manchester, N. H	57.0	San Diego, Cal	29.0
Rio Grande City, Tex	51.2	Grand Haven, Mich	33.4

DEVIATIONS FROM NORMAL TEMPERATURES.

The following table shows for certain stations, as reported by voluntary observers, (1) the normal temperature for a series of years; (2) the length of record during which the observations have been taken, and from which the normal has been computed; (3) the mean temperature for December, 1888; (4) the departure of the current month from the normal; (5) and

the extreme monthly means for December during the period of observation and the years of occurrence:

State and Station.	County.	(1) Normal for the month of Dec.	(2) Length of record.	(3) Mean for Dec., 1888.	(4) Departure from normal.	(5) Extreme monthly mean temperature for December. Highest.	Year.	Lowest.	Year.
Arkansas.		°	*Years*	°	°	°		°	
Lead Hill	Boone	36.8	7	59.6	+2.8	44.5	1881	29.1	1884
California.									
Sacramento	Sacramento	47.0	36	46.2	−0.8	51.0	1861	39.5	1874
Colorado.									
Fort Lyon	Bent	27.9	21	34.9	+7.0	39.6	1867	17.7	1878
Connecticut.									
Middletown	Middlesex	28.3	20	31.7	+3.4	33.2	1865	21.8	1872
Dakota.									
Fort Randall	Todd	20.4	31	27.7	+7.3	31.6	1881	3.5	1880
Florida.									
Merritt's Island	Brevard	61.9	5	59.5	−2.4	64.9	1884	58.0	1885
Georgia.									
Forsyth	Monroe	48.8	14	49.3	+0.5	56.7	1879	39.8	1876
Illinois.									
Peoria	Peoria	28.7	33	34.2	+5.5	44.3	1877	18.5	1876
Riley	McHenry	22.2	32	27.9	+5.7	37.7	1877	11.1	1876
Indiana.									
Vevay	Switzerland	34.2	23	37.4	+3.4	44.8	1877	24.6	1876
Iowa.									
Cresco	Howard	15.9	17	23.9	+8.0	34.0	1877	4.5	1876
Monticello	Jones	21.4	34	28.6	+7.2	39.5	1877	8.1	1859
Logan	Harrison	24.1	14	31.5	+7.4	34.9	1877	15.4	1879
Kansas.									
Lawrence	Douglas	29.5	21	34.8	+5.3	44.4	1877	19.8	1872
Wellington	Sumner	30.6	9	40.0	+9.4	40.0	1888	23.1	1884
Louisiana.									
Grand Coteau	St. Landry	52.7	6	53.6	+0.9	57.7	1884	51.8	1887
Maine.									
Gardiner	Kennebec	22.8	48	28.5	+5.7	31.6	1881	13.9	1859
Maryland.									
Cumberland	Allegany	31.5	29	33.6	+2.1	40.0	1877	24.8	1866
Massachusetts.									
Amherst	Hampshire	27.0	52	31.9	+4.9	36.0	1881	19.5	1872
Newburyport	Essex	29.3	15	32.2	+2.9	36.5	1881	22.1	1856
Somerset	Bristol	30.0	16	33.2	+3.2	37.9	1881	21.8	1876
Michigan.									
Kalamazoo	Kalamazoo	26.7	12	31.8	+5.1	38.2	1877	19.8	1886
Thornville	Lapeer	26.6	11	30.8	+4.2	31.0	1881	19.6	1886
Minnesota.									
Minneapolis	Hennepin	14.3	24	23.6	+9.3	31.6	1877	1.9	1872
Montana.									
Fort Shaw	Lewis & Clarke	24.9	20	34.8	+9.9	39.7	1875	2.2	1884
New Hampshire.									
Concord	Merrimack	25.2	26	29.9	+4.7	33.0	1829	12.8	1831
New Jersey.									
Moorestown	Burlington	32.2	25	34.3	+2.1	39.8	1881	23.9	1876
South Orange	Essex	31.6	18	32.4	+0.8	37.7	1881	24.3	1872
New York.									
Cooperstown	Otsego	27.1	34	27.6	+0.5	33.1	1881	14.7	1876
Palermo	Oswego	24.8	35	29.1	+4.3	32.1	1881	16.8	1880
North Carolina.									
Lenoir	Caldwell	37.6	16	37.1	−0.5	44.3	1879	29.1	1876
Ohio.									
N'th Lewisburgh	Champaign	29.8	56	33.4	+3.6	41.0	1877 '83	19.0	1876
Wauseon	Fulton	26.3	18	31.2	+4.9	38.8	1877	17.4	1872
Oregon.									
Albany	Linn	41.6	9	44.0	+2.4	49.5	1886	31.0	1884
Eola	Polk	39.5	17	43.2	+3.7	47.0	1886	30.7	1884
Pennsylvania.									
Dyberry	Wayne	25.1	24	27.8	+2.7	32.8	1881	17.3	1876
Grampian Hills	Clearfield	25.1	24	29.1	+4.0	37.0	1877	16.0	1876
Wellsborough	Tioga	29.7	9	29.8	+0.1	39.5	1881	22.3	1880
South Carolina.									
Statesburgh	Sumter	46.9	7	44.5	−2.4	51.3	1883	43.6	1882
Tennessee.									
Austin	Wilson	39.8	18	40.4	+0.6	49.4	1879	25.0	1876
Milan	Gibson	38.4	5	39.8	+1.4	42.1	1883	34.2	1886
Texas.									
Fort Concho	Tom Green	45.6	16	52.1	+6.5	52.1	1888	39.1	1876
New Ulm	Austin	53.6	17	54.8	+1.2	60.9	1875	46.1	1876
Vermont.									
Strafford	Orange	21.5	15	25.6	+4.1	29.5	1851	13.5	1876
Virginia.									
Bird's Nest	Northampt'n	41.2	20	38.9	−2.3	51.1	1879	32.7	1876
Wytheville	Wythe	34.9	24	35.1	+0.2	42.0	1879	26.0	1876
West Virginia.									
Helvetia	Randolph	34.1	11	35.2	−1.1	42.5	1879	24.6	1880
Wisconsin.									
Madison	Dane	22.2	25	28.4	+6.2	38.7	1877	11.1	1876
Washington.									
Fort Townsend	Jefferson	41.0	15	44.0	+3.0	45.3	1885	33.0	1884

FROST.

As compared with the preceding month the southern limit of frost in Florida has changed but slightly, no frost being reported south of the northern portion of Lee County. Along the middle and eastern Gulf coast frost was more frequently reported in November than during the current month. In Texas frost was reported as far south as Rio Grande City in November, while in December the frost limit was apparently considerably to the northward of that locality.

Alva, Lee Co., Fla.: the heavy frost on the mornings of the 21st and 22d destroyed all tender vegetation.—*Report of voluntary observer.*

Auburn, Ala.: the weather was generally cool enough to produce light frosts and thin ice frequently during the month.—*Alabama State Weather Service Report.*

University, Miss.: frosts mostly light, were reported frequently throughout the northern and southern parts of the state.—*Mississippi State Weather Service Report.*

New Orleans, La.: the first killing frost, with ice formation, occurred in the southern parishes on the 20th.—*Report of Louisiana State Weather Service.*

Table of comparative maximum and minimum temperatures for December.

State or Territory.	Stations.	For 1888. Max.	Min.	Since establishment of station. Max.	Year.	Min.	Year.	Length of record.
		°	°	°		°		*Yrs.*
Alabama	Mobile	72.7	25.0	78.8	1884	14.0	1880	18
Do	Montgomery	69.0	24.2	77.1	1884	8.0	1880	17
Arizona	Whipple B'ks	57.8	18.3	70.0	1881	−18.0	1879	13
Do	Fort Apache	68.7	18.4	70.0	1881, 1882	− 8.0	1884	11
Arkansas	Fort Smith	67.5	21.5	78.1	1883	7.7	1886	7
Do	Little Rock	68.7	23.0	74.0	1880, 1883	6.0	1880	10
California	San Francisco	64.7	43.1	69.3	1887	34.0	1879	18
Do	San Diego	73.0	44.0	82.0	1874	32.0	1879	18
Colorado	Denver	67.5	7.2	74.1	1885	−25.0	1876	18
Do	Montrose	46.1	9.0	55.5	1885	−16.2	1887	4
Connecticut	New Haven	54.2	5.0	65.5	1887	− 9.5	1884	17
Do	New London	53.2	9.3	60.5	1879	− 7.5	1883	17
Dakota	Fort Buford	58.3	− 9.3	59.3	1885	−46.0	1879	10
Do	Yankton	65.2	5.8	62.0	1875	−34.0	1879	16
Dis. of Columbia	Washington City	60.6	16.2	73.0	1873	−13.0	1880	19
Florida	Jacksonville	73.6	27.5	81.0	1875	19.0	1880	18
Do	Key West	78.8	51.6	88.0	1876	44.0	1876	19
Georgia	Atlanta	63.0	20.9	71.0	1879	1.0	1880	11
Do	Savannah	69.1	25.0	80.0	1875	15.0	1880	18
Idaho	Boisé City	61.9	10.0	60.5	1885	− 7.3	1884	12
Illinois	Cairo	61.9	19.9	72.0	1875	− 7.0	1872	17
Do	Chicago	52.9	14.8	68.0	1875	−23.0	1872	17
Indiana	Indianapolis	56.0	17.4	68.0	1875	−15.0	1876	16
Indian Ter	Fort Sill	69.3	20.2	77.0	1880	2.0	1879, 80, 84	12
Iowa	Dubuque	58.0	8.0	64.0	1877	−23.5	1886	16
Do	Des Moines	60.3	11.0	57.0	1883	−19.5	1886	11
Kansas	Dodge City	70.4	10.9	73.0	1875	−15.0	1876	15
Do	Leavenworth	63.0	9.6	72.0	1875	−14.0	1880	18
Kentucky	Louisville	62.0	18.0	74.0	1875	− 7.0	1880	17
Louisiana	New Orleans	72.3	30.7	78.0	71,75,79,80	20.0	1870, 1880	19
Do	Shreveport	74.4	26.5	79.0	1875	10.0	1880	16
Maine	Eastport	51.7	− 3.1	54.0	1877	−21.0	1884	16
Do	Portland	57.0	2.5	59.0	1884	−17.0	1872	17
Maryland	Baltimore	58.5	16.5	71.0	1881	− 3.0	1880	17
Massachusetts	Boston	60.5	5.3	66.0	1881	−12.0	1883	18
Michigan	Marquette	46.6	10.5	59.0	1875	−20.0	1880	15
Do	Grand Haven	50.0	16.6	61.0	1877	−12.0	1884	16
Minnesota	Saint Vincent	42.6	−16.0	44.8	1884	−47.8	1884	9
Do	Saint Paul	58.1	5.0	56.0	1877	−39.0	1879	16
Mississippi	Vicksburg	70.2	24.2	79.0	1873, 1875	12.0	1880	17
Missouri	Saint Louis	59.0	20.6	74.0	1875	−17.0	1872	18
Montana	Ft. Assinaboine	60.9	− 8.4	67.9	1885	−50.0	1884	9
Do	Helena	53.0	−14.0	56.8	1885	−40.0	1880	8
Nebraska	North Platte	66.8	− 2.9	69.0	1885	−27.0	1879	15
Do	Omaha	65.8	9.6	66.0	1875	−17.0	1879, 1884	16
Nevada	Winnemucca	57.7	11.0	65.0	1878	−20.0	1879	10
New Jersey	Atlantic City	53.0	11.8	64.0	1877	− 7.0	1880	16
New Mexico	Santa Fé	52.5	15.5	65.0	1878	−13.0	1879	16
New York	Buffalo	55.2	3.8	62.0	1875	− 9.0	1880	16
Do	New York City	56.3	8.8	66.2	1881	− 6.0	1880	19
North Carolina	Charlotte	68.5	20.2	71.0	1884	− 5.0	1880	11
Do	Wilmington	67.7	25.8	78.0	1879	10.0	1880	18
Ohio	Cincinnati	62.0	16.2	72.0	1875	− 8.0	1872	19
Do	Sandusky	61.0	15.0	63.0	1879	−13.0	1880	12
Oregon	Portland	59.0	30.8	65.4	1886	3.0	1879	16
Do	Roseburgh	66.5	31.8	65.8	1886	7.0	1879	12
Pennsylvania	Pittsburgh	62.1	12.2	72.8	1885	− 9.0	1880	16
Do	Philadelphia	61.2	12.0	70.0	1873	− 5.0	1880	18
Rhode Island	Block Island	54.3	9.5	60.0	1884	− 3.2	1884	9
South Carolina	Charleston	67.6	27.9	76.0	1881	13.0	1880	16
Tennessee	Knoxville	59.8	21.5	75.0	1874	− 5.0	1880	18
Do	Memphis	66.4	22.9	74.0	1875	3.0	1876, 1880	16
Texas	Brownsville	78.0	41.0	92.2	1885	18.0	1880	13
Do	Fort Elliott	72.0	19.4	83.0	1880	−10.0	1879	10
Utah	Salt Lake City	57.0	9.0	61.0	1874	−10.0	1879	15
Virginia	Lynchburgh	62.7	17.2	73.0	1873	− 5.0	1880	16
Do	Norfolk	66.2	20.1	73.0	73,74,75,79	6.0	1880	18
Washington	Spokane Falls	50.5	13.9	57.2	1886	−17.8	1884	8
Do	Olympia	57.0	20.0	64.2	1885	8.0	1879, 1884	12
Wisconsin	La Crosse	56.0	2.5	60.0	1877	−37.0	1872	17
Do	Milwaukee	52.0	12.8	63.0	1877	−21.6	1884	19
Wyoming	Cheyenne	61.0	2.5	64.2	1885	−24.0	1879, 1880	16

LIMITS OF FREEZING WEATHER.

On chart v are shown the southern and western limits of freezing weather for December, 1888. A line representing the southern limit is traced from Titusville, Fla., westward over the northern Gulf to Louisiana between New Orleans and Port Eads, and thence into central Texas, where it trends south-

ward into the Rio Grande Valley, somewhat to the westward of Rio Grande City. A line showing the western limit is traced from southeastern Arizona northwestward over central California, and thence northward near the coasts of Oregon and Washington Territory, there being a gradual increase of distance from the coast line from Washington Territory southward to northern California.

TEMPERATURE OF WATER.

The following table shows the maximum, minimum, and mean water temperature as observed at the harbors of the several stations; the monthly range of water temperature; and the mean temperature of the air for December, 1888:

Stations.	Temperature at bottom.				Mean temperature of air at the station.
	Max.	Min.	Range.	Monthly mean.	
	°	°	°	°	°
Canby, Fort, Wash	50.2	43.0	7.2	47.5	47.4
Cedar Keys, Fla (1)	.....	.....	.....	.....	.....
Charleston, S. C	54.0	48.0	6.0	51.5	47.2
Eastport, Me	44.9	39.5	5.4	42.3	28.4
Galveston, Tex	63.0	53.5	9.5	57.9	56.6
Key West, Fla	73.8	62.3	11.5	68.5	67.1
New York City	42.8	32.5	10.3	37.8	34.4
Pensacola, Fla	65.0	54.0	11.0	59.6	50.4
Portland, Oregon	48.0	39.0	9.0	45.3	43.6

(1) Report not received.

PRECIPITATION (expressed in inches and hundredths).

The distribution of precipitation over the United States and Canada for December, 1888, as determined from the reports of nearly 1,500 stations, is exhibited on chart iii. In the table of miscellaneous meteorological data are given, for each Signal Service station, the total precipitation, with the departure from the normal. The figures opposite the names of the geographical districts in the columns for precipitation and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the precipitation is below the normal and subtracting when above.

The precipitation for December, 1888, was above the normal in California, the southern plateau region, over an area extending from central Texas northward to the lower Missouri valley, in portions of the upper lake region and upper Mississippi valley, southern Florida, northern part of the middle Atlantic states, in New England (with exception of a small area along the southern coast), and in the Maritime Provinces. In other portions of the United States and Canada the precipitation was below the normal. The most noteworthy features of this month's precipitation were the large excess in southern Florida, the lower Missouri valley, California, and southern plateau, and the marked deficiency in the extreme northwest, Ohio valley and Tennessee, lower lake region, and lower Rio Grande valley. In southern Florida the rainfall was about three times the December normal, and in California, the southern plateau, and lower Missouri valley it exceeded the normal by from 30 to 70 per cent. In the extreme northwest, where the normal December rainfall is very small, about 0.75, only about one-fourth of that amount fell this month. In the lower Rio Grande valley, lower lake region, Ohio valley and Tennessee the precipitation was about one-half of the normal, and in the following-named districts it ranged from 30 to 35 per cent. below the normal: east Gulf states, northern and southern Rocky Mountain slopes, northern plateau, and north Pacific coast. It ranged from 85 to 90 per cent. of the normal in the middle and south Atlantic states and central Rocky Mountain slope; and in the upper lake region the deficiency amounted to about 5 per cent. While an average determined from all Signal Service stations in New England shows a slight deficiency as compared with the normal, there was a small but general excess over much the larger portion of that district, the slight deficiency shown in the table being due to the very small precipitation which occurred at a few stations along the southern coast.

DEVIATIONS FROM AVERAGE PRECIPITATION.

The following table shows for certain stations, as reported by voluntary observers, (1) the average precipitation for a series of years; (2) the length of record during which the observations have been taken, and from which the average has been computed; (3) the total precipitation for December, 1888; (4) the departure of the current month from the average; (5) and the extreme monthly precipitation for December during the period of observation and the years of occurrence:

State and station.	County.	(1) Average for the month of Dec.	(2) Length of record.	(3) Total for Dec., 1888.	(4) Departure from average.	(5) Extreme monthly precipitation for December.			
						Greatest.		Least.	
						Am't.	Year.	Am't.	Year.
Arkansas.		*Inches*	*Years*	*Inches*	*Inches.*	*Inches*		*Inches.*	
Lead Hill	Boone	4.16	7	2.31	—1.85	11.37	1884	1.51	1886
California.									
Sacramento	Sacramento	4.44	39	5.88	+1.44	13.41	1852	0.00	1850, 1876
Colorado.									
Fort Lyon	Bent	0.24	12	trace.	—0.24	1.20	1883	0.00	1868
Connecticut.									
Middletown	Middlesex	3.72	28	5.55	+1.83	7.91	1878	1.20	1875
Dakota.									
Fort Randall	Todd	0.86	30	0.66	—0.20	4.75	1877	0.00	1864
Florida.									
Merritt's Island	Brevard	2.61	11	8.55	+5.94	8.55	1888	0.46	1883
Georgia.									
Forsyth	Monroe	4.77	14	4.58	—0.19	7.56	1887	2.35	1877
Illinois.									
Peoria	Peoria	2.48	33	2.39	—0.09	7.15	1873	0.28	1876
Riley	McHenry	2.01	28	1.87	—0.14	5.67	1876	0.28	1857
Indiana.									
Logansport	Casa	3.56	12	(1)	(1)	5.99	1881	0.00	1876
Vevay	Switzerland	4.03	23	1.16	—2.87	7.60	1879	1.16	1888
Iowa.									
Cresco	Howard	1.32	17	2.20	+0.88	2.83	1879	0.30	1874
Monticello	Jones	2.44	33	2.26	—0.18	6.99	1856	0.65	1867
Logan	Harrison	1.31	19	1.86	+0.55	3.30	1882	0.20	1870, 1876
Kansas.									
Lawrence	Douglas	1.70	24	1.78	+0.08	4.39	1873	0.19	1862
Wellington	Sumner	1.08	9	0.87	—0.21	3.14	1884	0.08	1886
Louisiana.									
Grand Coteau	St. Landry	6.59	5	4.03	—2.56	14.43	1884	2.70	1885
Maine.									
Gardiner	Kennebec	3.76	48	4.20	+0.44	7.55	1878	0.68	1838
Maryland.									
Cumberland	Allegany	2.17	17	1.53	—0.64	4.50	1881	0.70	1871
Massachusetts.									
Amherst	Hampshire	3.58	53	4.29	+0.71	7.09	1839	0.96	1838
Newburyport	Essex	3.75	15	4.76	+1.01	7.24	1852	0.25	1875
Somerset	Bristol	3.46	16	4.13	+0.67	5.67	1884	0.82	1875
Michigan.									
Kalamazoo	Kalamazoo	3.15	12	1.94	—1.21	7.14	1884	1.65	1880
Thornville	Lapeer	2.74	11	1.65	—1.09	5.25	1879	0.67	1880
Minnesota.									
Minneapolis	Hennepin	1.62	21	0.61	—1.01	5.30	1873	0.33	1866
Montana.									
Fort Shaw	Lewis&Clarke	0.54	18	0.48	—0.06	2.47	1884	0.00	1875, 1877
New Hampshire.									
Concord	Merrimack	3.29	8	3.52	+0.23	3.97	1857,'84	1.55	1856
New Jersey.									
Moorestown	Burlington	3.21	25	2.69	—0.52	5.77	1865	0.90	1877
South Orange	Essex	3.83	18	4.95	+1.12	7.07	1878	0.91	1877
New York.									
Cooperstown	Otsego	2.57	34	3.30	+0.73	6.02	1881	0.97	1877
Palermo	Oswego	3.94	34	2.25	—1.69	7.95	1878	1.60	1874
North Carolina.									
Lenoir	Caldwell	4.09	14	2.70	—1.39	8.70	1877	1.60	1874, 1883
Ohio.									
N. Lewisburgh	Champaign	3.01	16	1.85	—1.16	5.45	1873	1.50	1882
Wauseon	Fulton	2.39	16	1.88	—0.51	4.32	1879	0.41	1874
Oregon.									
Albany	Linn	8.72	10	4.28	—4.44	14.21	1887	4.28	1888
Eola	Polk	6.58	16	2.59	—3.99	11.50	1880	0.84	1876
Pennsylvania.									
Dyberry	Wayne	2.60	19	3.40	+0.80	5.02	1878	0.95	1874
Grampian Hills	Clearfield	3.68	18	2.89	—0.79	5.12	1872	1.99	1871
Wellsborough	Tioga	4.70	9	5.91	+1.21	9.57	1881	1.27	1883
South Carolina.									
Statesburgh	Sumter	3.40	7	3.98	+0.58	5.87	1884	1.26	1883
Tennessee.									
Austin	Wilson	4.61	18	1.57	—3.04	10.20	1879	0.85	1882
Milan	Gibson	3.97	5	2.00	—1.97	7.25	1884	2.00	1888